

Author: Marjan Colletti of marcosandmarjan
Research Output 2: Xiyuan Entertainment Complex

Co-Author: Marcos Cruz

Output Type: Design

Winning Invited Competition Design Entry for Building: Xiyuan
Entertainment Complex

Function: Entertainment Complex

Location: Beijing, China

Date: 2004

Area: 180,000 m²

300 Word Summary

The Xiyuan Entertainment Complex, Beijing China is a winning design proposal selected from an invited competition for a 180,000m² entertainment complex located in front of the Yiheyuan Royal Summer Palace, Beijing, one of China's most important cultural sites.

Questions

How can innovative CAD/CAM design and manufacturing techniques be used to generate a new contemporary architectural identity in China?

Aims/Objectives

The project provides new design solutions in terms of:

- (1) Technology (CAD/CAM applied to structure and skin).
- (2) Typology (giving full attention to social and aesthetic concepts grounded in significant Chinese architecture).
- (3) Architectural language (tradition and innovation).

Contexts

The project's proximity to a world heritage site and its consequent height restrictions triggered an inherently contextual and low-density proposal, as opposed to the pervasive western-style impositions of high-density commercial infrastructures.

Methods

The research involved four major stages to develop drawings, diagrams, and hand-made and CAD/CAM models:

- (1) The 'Big Roof' phenomenon: readdressing the traditional upturned tiled roof.
- (2) From mono-programmatic to multi-programmatic: the redefinition of the pre-established programme.
- (3) Subtle contextualization: the careful analysis of building masses, circulation flows and green areas.
- (4) Technological and cultural synthesis: the application of CAD/CAM technologies to primary steel structure, stone cladding and wood detailing.

Dissemination

Exhibitions at Feng Chia University, Taiwan, 2005; Royal Academy Summer Exhibition, London, 2005; *Metaflux*, São Paulo, Lisbon and Aveiro, 2005; Venice Architecture Biennale, 2004. A major article was published in *Time+Architecture* (2006). Reviews in international magazines: *2G Dossier* (2005), *Ponto Final* (2005), *Construir* (2004). Illustrated in *RIBA Journal* (2005), *East of Eros* catalogue (2005), *5th FEIDAD* book (2005), *Metaflux* catalogue (2005), *L'ARCA* magazine (2005). Broadcast with Unit 20 work by CCTV-China.

Esteem

Winning entry of invited competition (2004).

Authorship

As part of the joint architectural practice marcosandmarjan, Colletti and Cruz both contribute equally to the research.



Image 1
Final phase, aerial view showing
the project inserted into the
new urban fabric in front of the
Yiheyuan Royal Summer Palace,
marcosandmarjan, *Xiyuan* (2004).

General Description

The Xiyuan Entertainment Complex, Beijing China is a winning design proposal selected from an invited competition for a 180,000m² entertainment complex on a long strip of land of around 100m x 750m located right in front of the gates to the Yiheyuan Royal Summer Palace in the Haidian district in north-west Beijing, one of China's most important cultural sites. (image 1)

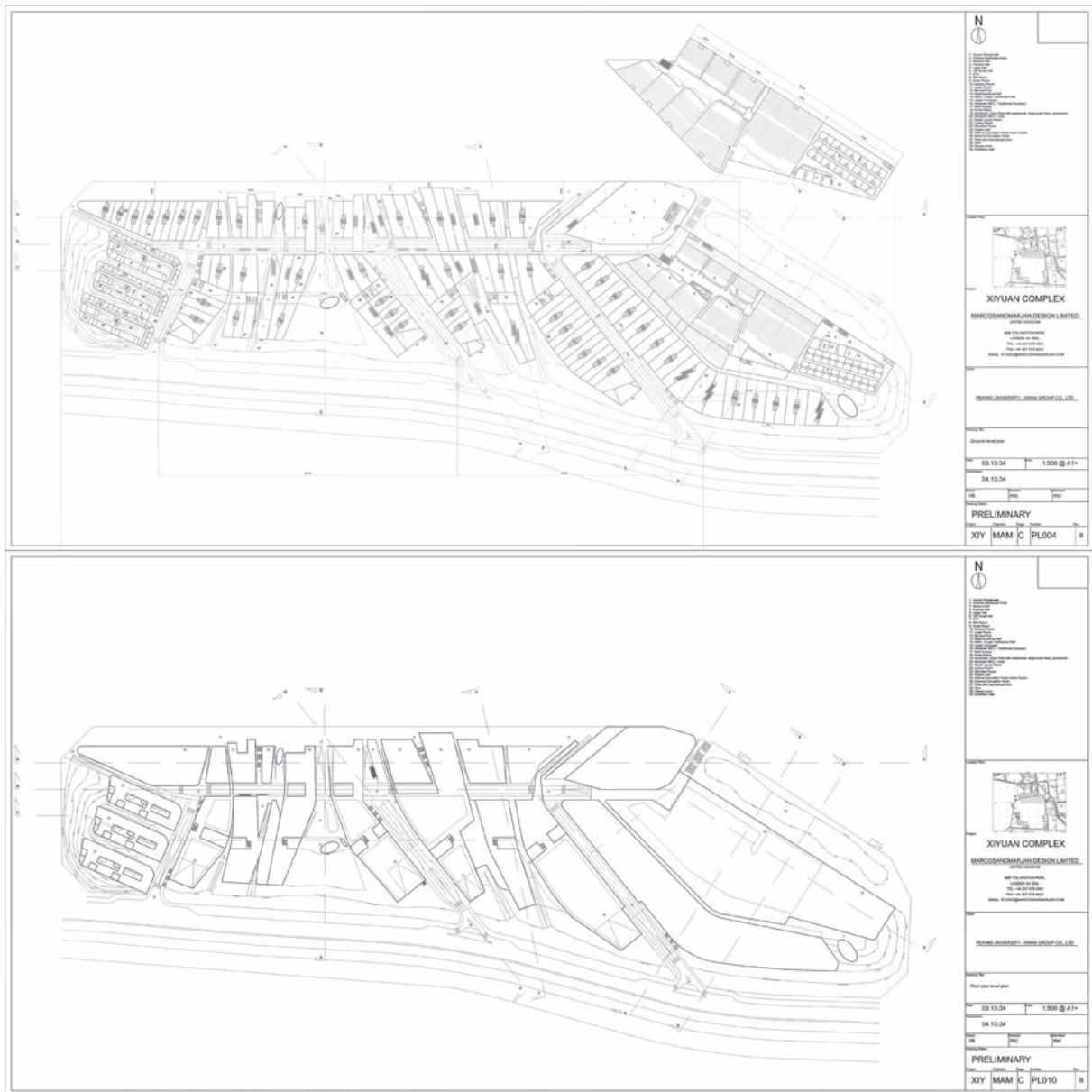


Image 2
Final phase, plans of roof and ground floor showing the arrangement of the various buildings and internal subdivision of the units, marcosandmarjan, Xiyuan (2004).

The programme is divided into two Major Entertainment Groups and eight Commercial Unit Buildings. The first major group includes eight cinemas, a KTV, an indoor games site and an exhibition area. These facilities are located on the busier eastern side of the site close to the underground station and the urban thoroughfare. They are grouped together into one building complex with a major distribution area (foyer) that simultaneously connects the upper ground floor entrances, proposed road and underground station on the -6m level. The exhibition area is located strategically between the North Boulevard and the main urban thoroughfare, whereas the KTV is placed on the most visible eastern corner of the side. The cluster of three hotel units is located on the calmer west side surrounded by a wall that safeguards the peacefulness of the interiors. (image 2)

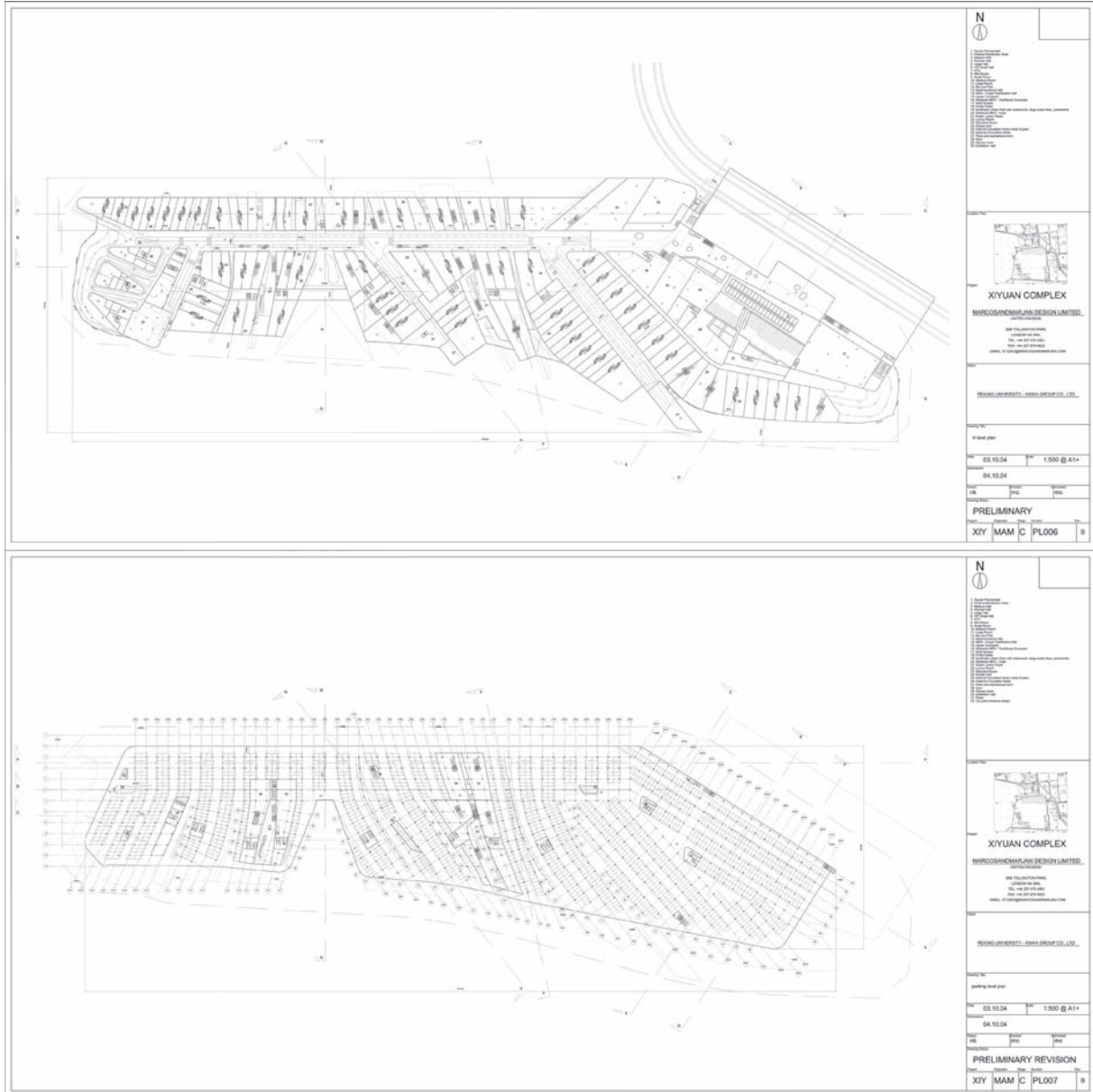


Image 3
Final phase, plans of basement levels showing the Xiyuan Avenue and the car park, marcosandmarjan, *Xiyuan* (2004).

The Xiyuan Avenue – a strip of road 500m long and 16m wide – runs through the middle of the site intersecting each Unit Building, dividing each one into a northern and a southern sector. The northern sector is smaller and more appropriate to the pedestrian flow of tourists along the North Boulevard. The bigger southern sector contains larger inner units that relate more to the quicker pace of the high-intensity car flow. From the Xiyuan Avenue, the grouping of all units into Unit Buildings enhances the intervention's urban character, in particular through the variety of façades and in-between open spaces. (image 3) From the south and north Boulevards, on the other hand, the gaps between buildings gradually interweave the landscape with the proposed built form, minimizing the impact of these built forms in such a delicate site. (image 4) The sequence of these autonomously standing volumes organizes the common car park located underneath and also the use of the upper roof areas. These interstices are designed to be circulation spaces that enable direct ventilation and insulation for the majority of units. They also allow for the separate management of the units, as well as a possible phasing during the construction period. (image 5)

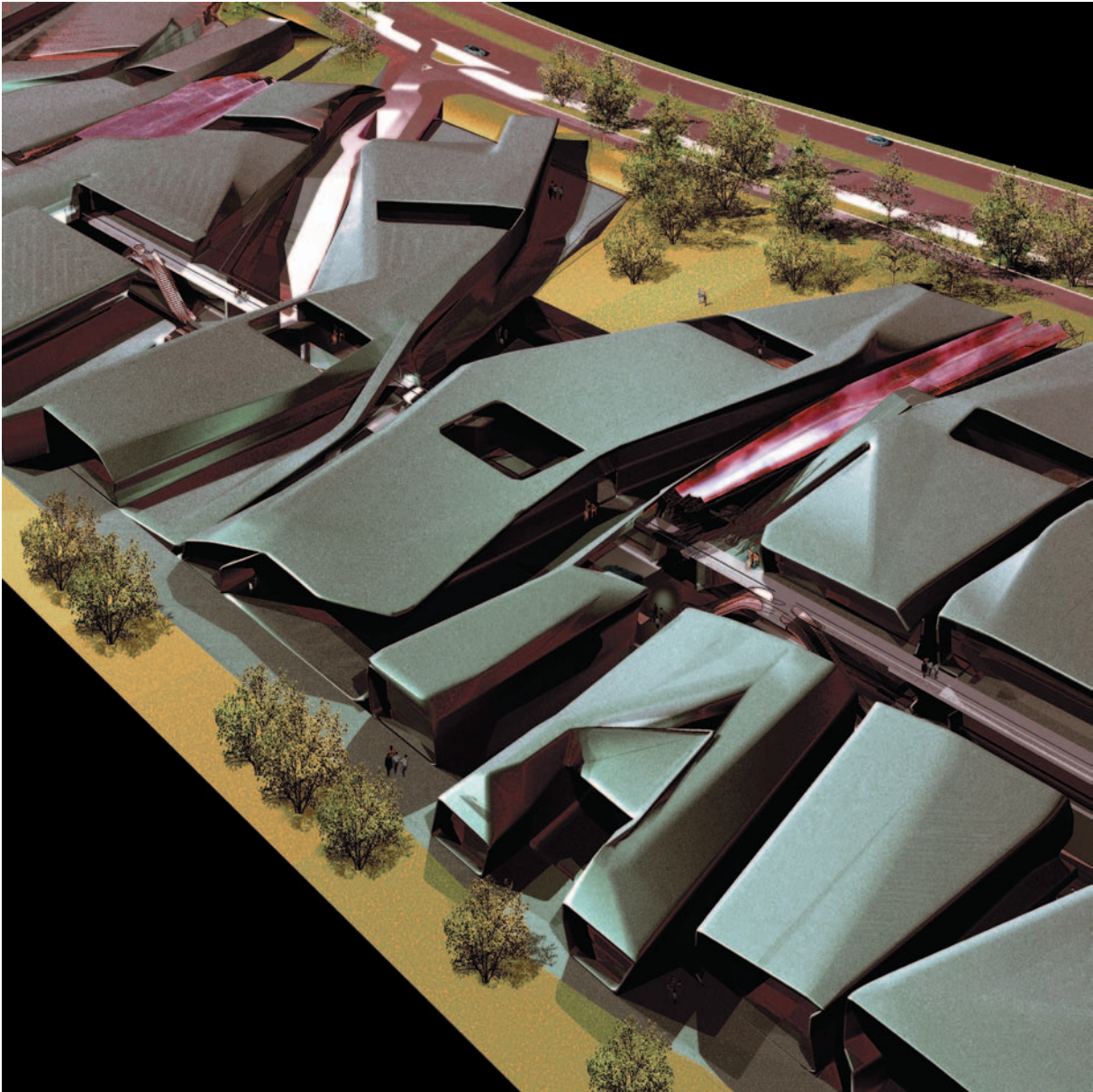


Image 4
Final phase, general view,
marcosandmarjan, *Xiyuan* (2004).

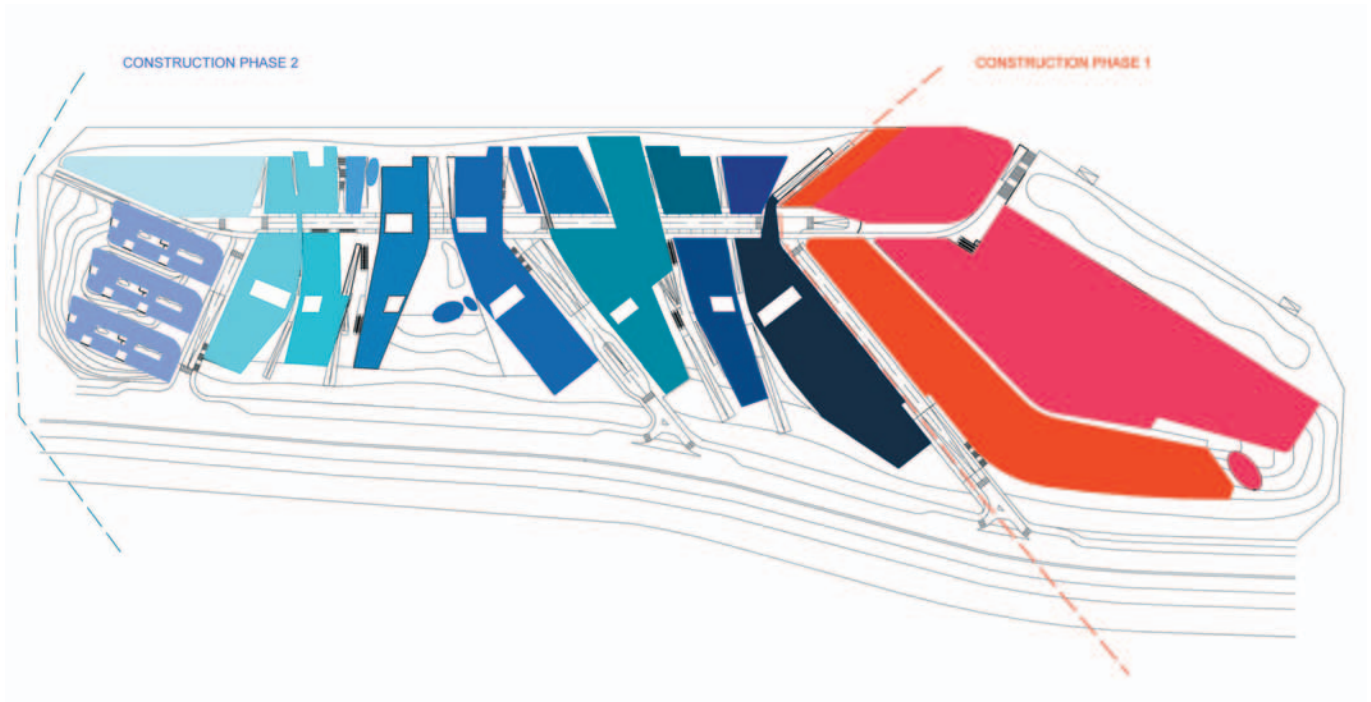


Image 5
Final phase, diagram of
different building phases,
marcosandmarjan, *Xiyuan* (2004).

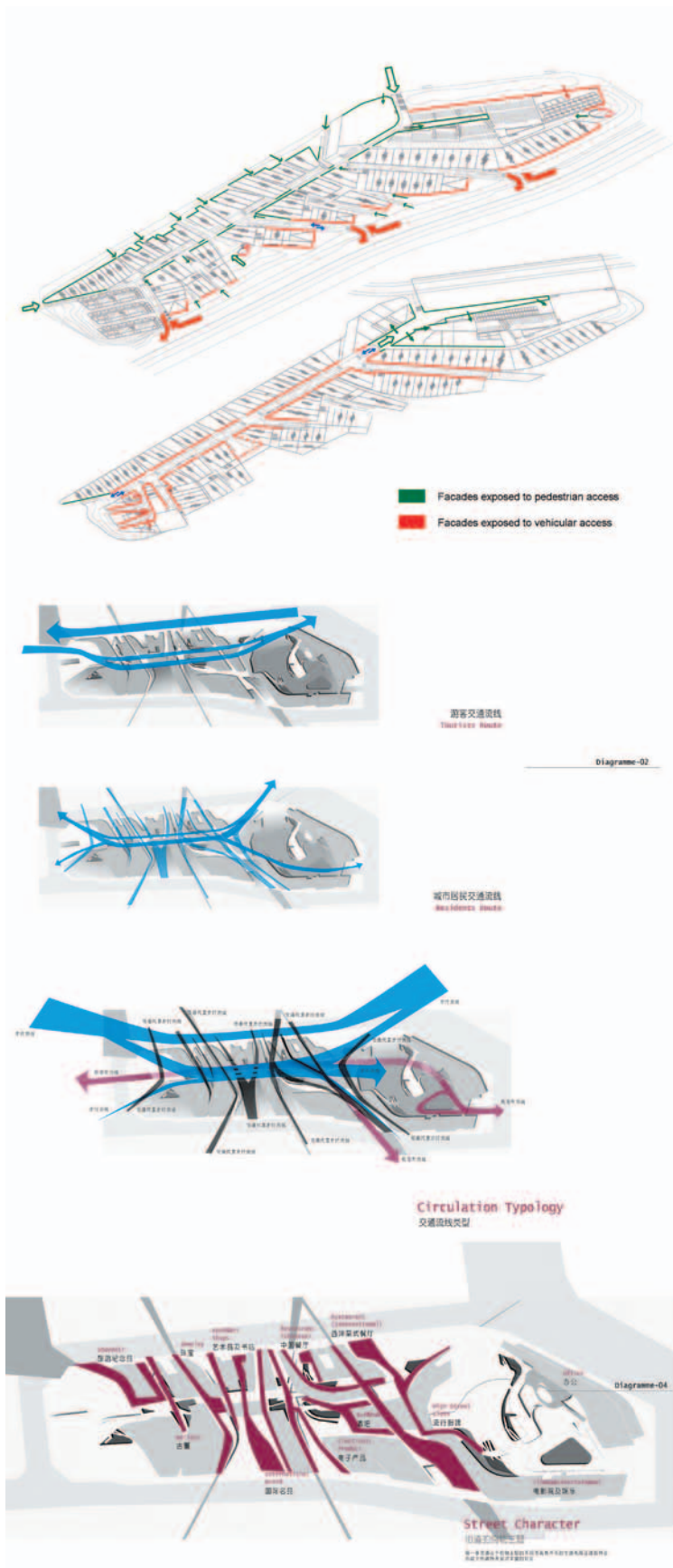


Image 6
 Various phases, diagrams showing pedestrian and vehicular access to the duplex units, and the 3D convoluted circulation from north to south, east to west, and across all levels, marcosandmarjan, Xiyuan (2004).

Inside the Unit Buildings all individual units are divided into duplex typologies with direct car access on the front façade (either from the South thoroughfare or the Xiyuan Avenue). In many cases pedestrian access is also provided on the floor underneath or above the duplex unit (either from the North Boulevard or the ground floor path along the Xiyuan Avenue, called Xiyuan Promenade). Internal Circulation Nodes within the duplex units integrate staircases, escalators, toilets and/or small office spaces in an in-between mezzanine floor. The point at which the staircases of two neighbouring units cross allows for a visual interchange between users of different units. (image 6)

There are three types of proposed plazas in the Xiyuan Entertainment Complex: two Sunken Plazas in the car park – the West Sunken Plaza and the East Sunken Plaza; a larger plaza on the 6m level – the Xiyuan Piazza; and several courtyards in the ground floor level of each building – the Upper Courtyards.

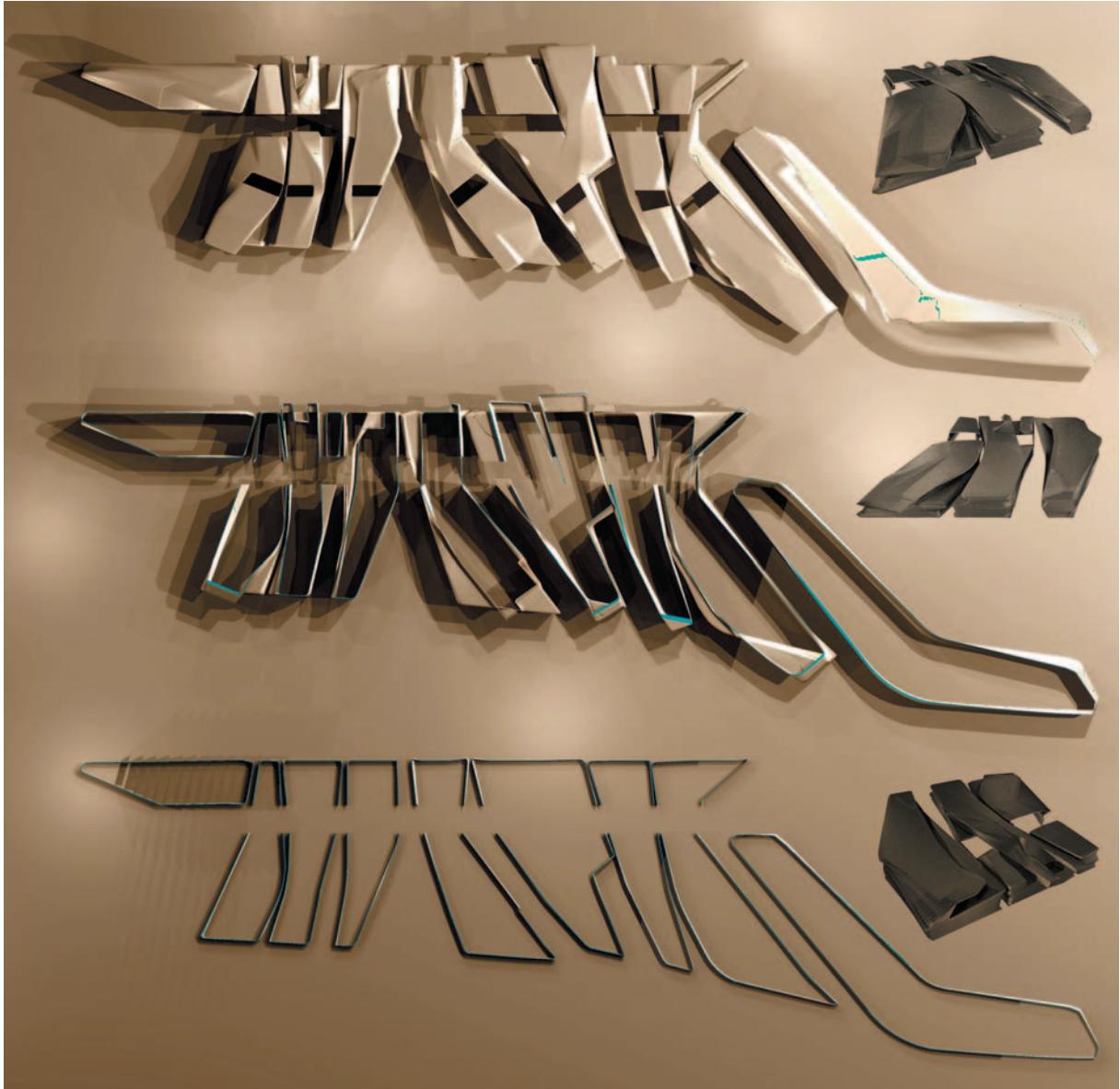


Image 7
Final phase, horizontal sections
and digital models of the 3D
building skin, marcosandmarjan,
Xiyuan (2004).

Questions

The main research question influencing the design was: How can innovative CAD/CAM design and manufacturing techniques be used to generate a new contemporary architectural identity in China?

Periods of American, Russian and nowadays multinational influences have created crucial episodes in China's architectural history, usually involving the mimicry or imitation of the aesthetics as well as particular elements of Chinese architecture. Similarly, but from the other perspective, after a period of straightforwardly copying western trends, followed by a period of partial rejection, China's incorporation of global economic and cultural phenomena from the West has now become irreversible, but we believe that this attitude should somehow now be transcended and that, regardless of nationality or provenance, the 'Orient-ation' of architects world-wide towards the East should be understood as a sign of hope for architecture today and the future. If used appropriately, new available and affordable technologies can place new ways of expressing contemporariness and identity (of both the designer and the client) at the architect's disposal. (image 7)

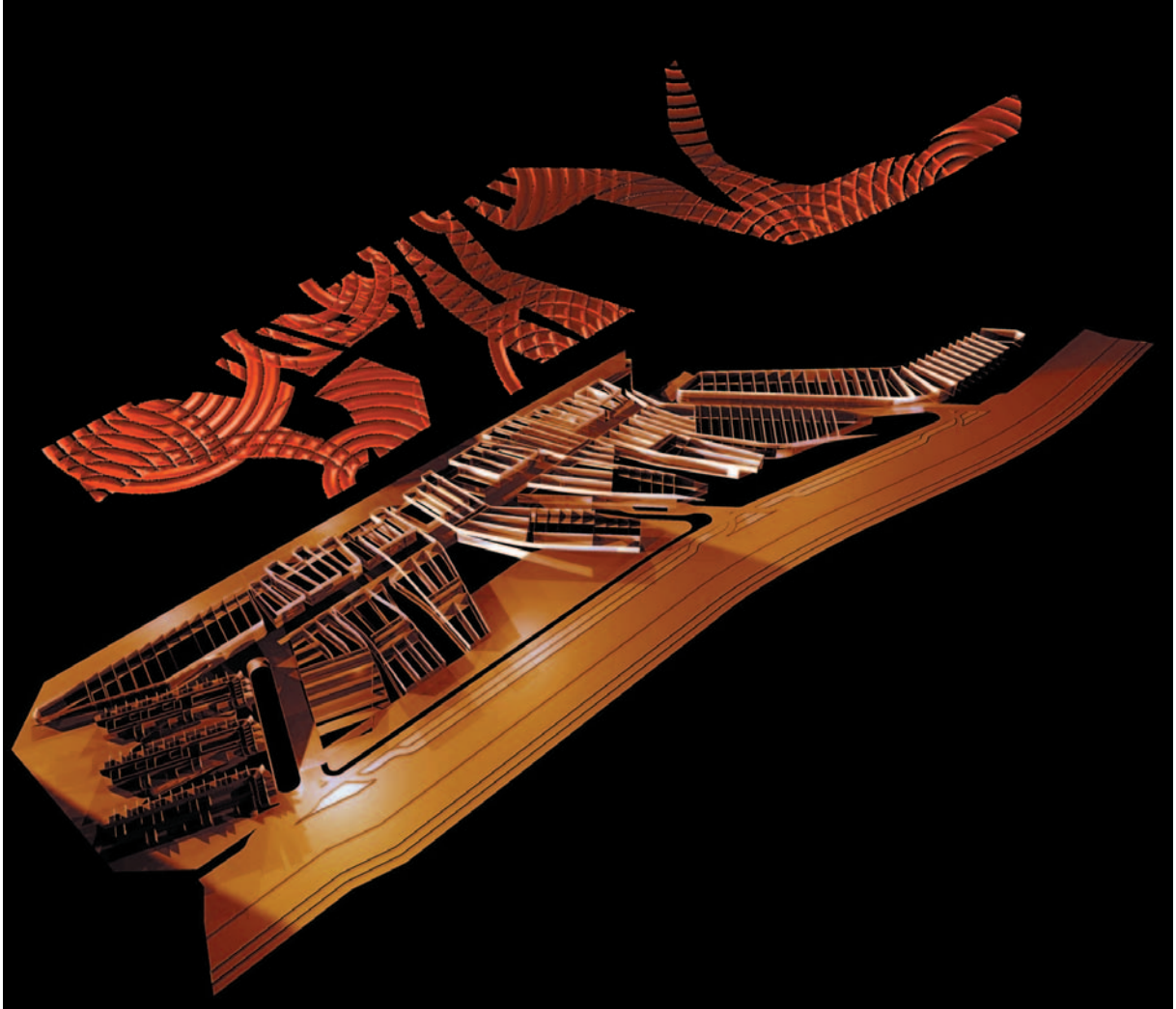


Image 8
Final phase, rendering showing
the reinterpreted traditional
longitudinal internal units
and the carved stone roof,
marcosandmarjan, *Xiyuan* (2004).

Aims/Objectives

The project provides new design solutions in terms of:

(1) Technology (CAD/CAM applied to structure and skin).

Architecture in China today has to encompass experimental technologies in order to become innovative. Because formal and technological know-how can be adopted rapidly and simultaneously in every part of the world, the proposal aims at global sophistication within a local context. The proposed architecture attends to the historical development of China's socio-cultural space, and focuses on the employment of groundbreaking technology that aims to combine high-tech manufacturing processes (China's growing industrial know-how) and low-tech assemblage (China's available labour). A thoroughly contemporary and advanced structural and material building solution is envisioned that incorporates Chinese sensibility into a technological state-of-the-arts computerized design and construction process. (image 8)

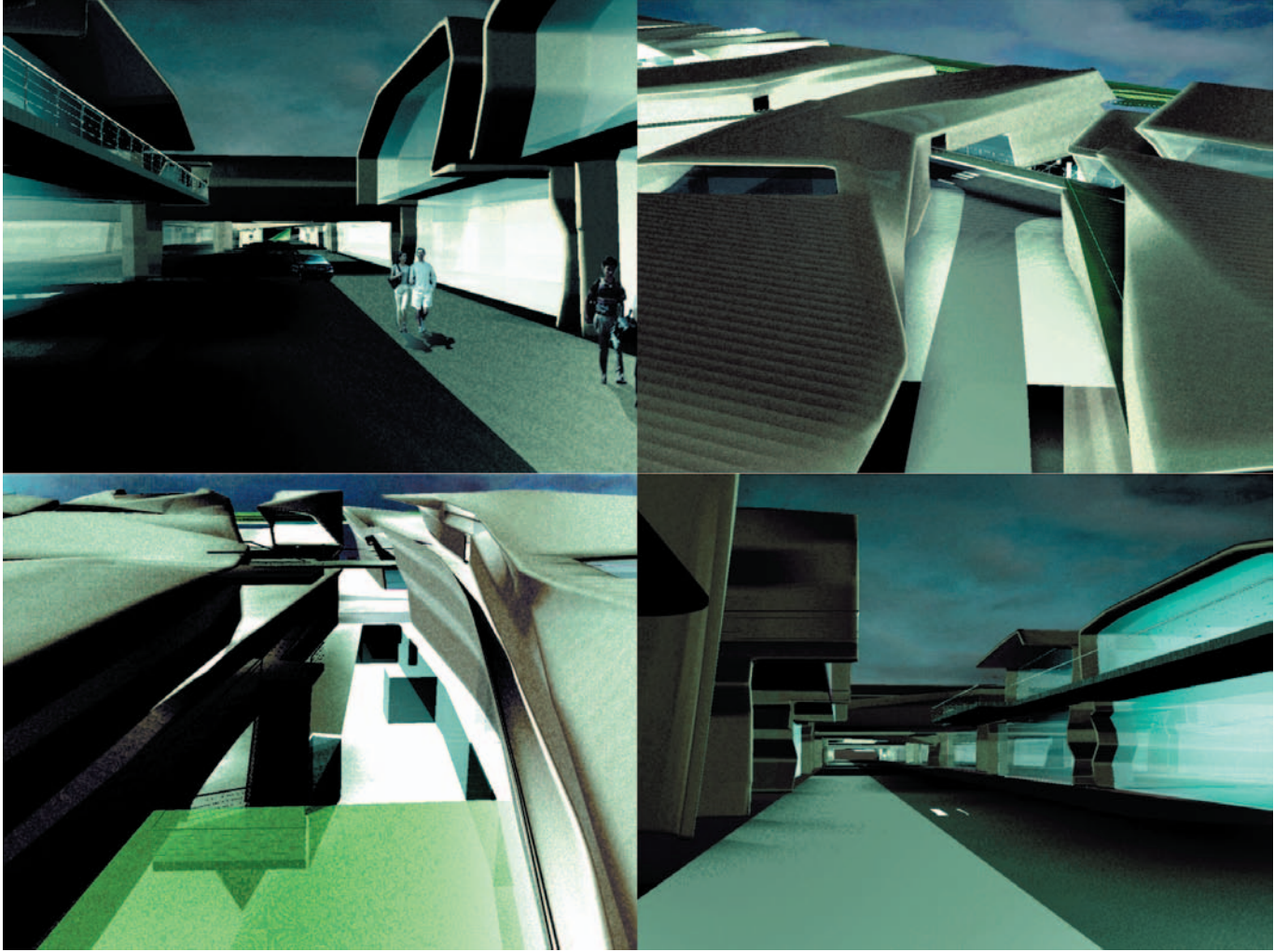


Image 9
Final phase, renderings of
intersecting roofs and interstitial
spaces, marcosandmarjan, *Xiyuan*
(2004).

(2) Typology (giving full attention to social and aesthetic concepts grounded in significant Chinese architecture).

As much as observing the past, the design concentrates on a meticulous integration of the project on such a vulnerable site, as well as interpreting contemporary Chinese society – especially in terms of the new habits and particular manners in which private and public spaces are appropriated. A sequence of distinctive interpenetrating roof structures, along with a series of courtyards – designed as protected yet public spaces – extend the tremendously rich lineage of notable Chinese historical buildings, while translating them through the requirements and intentions of a contemporary commercial intervention. (image 9)

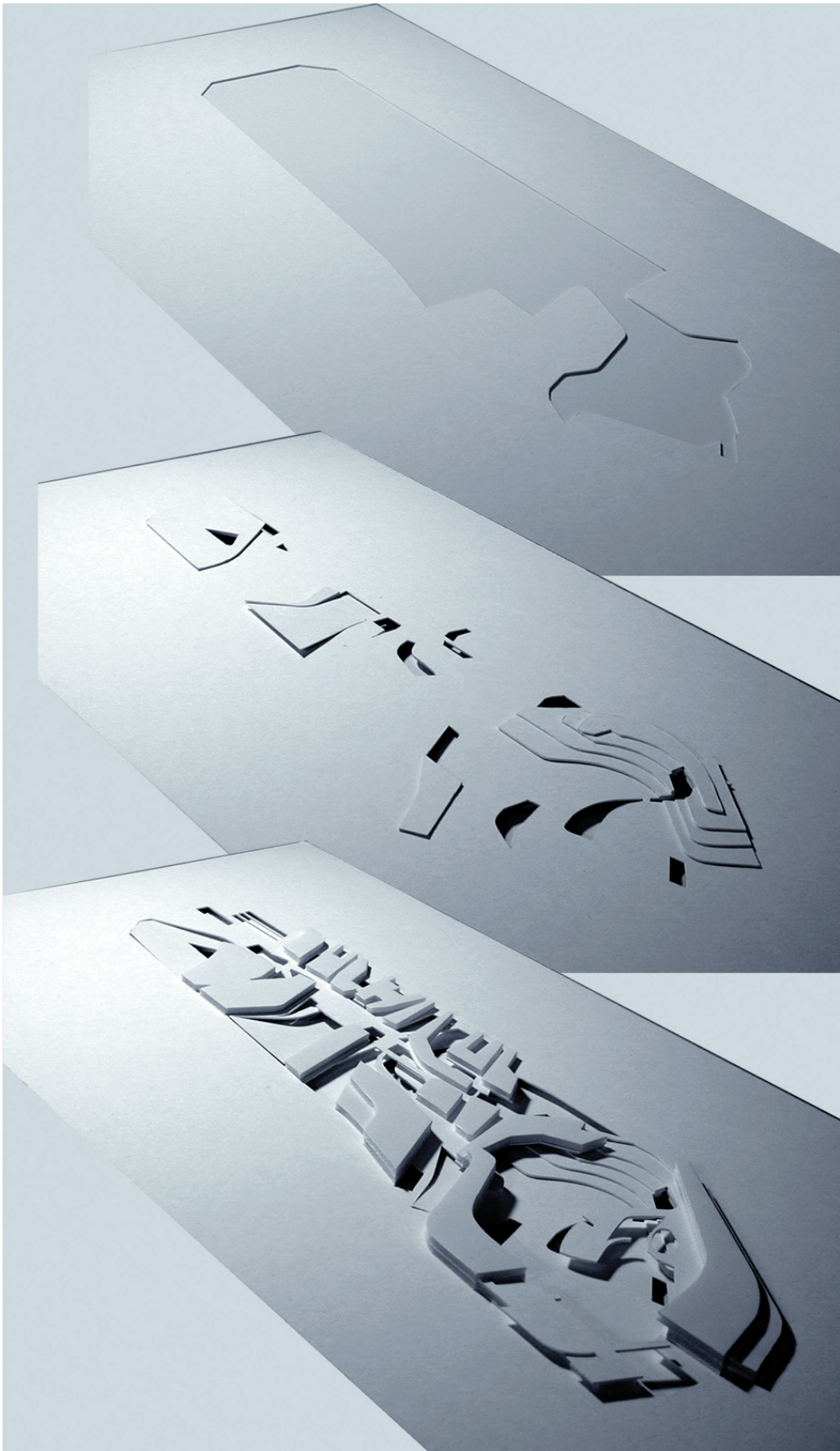
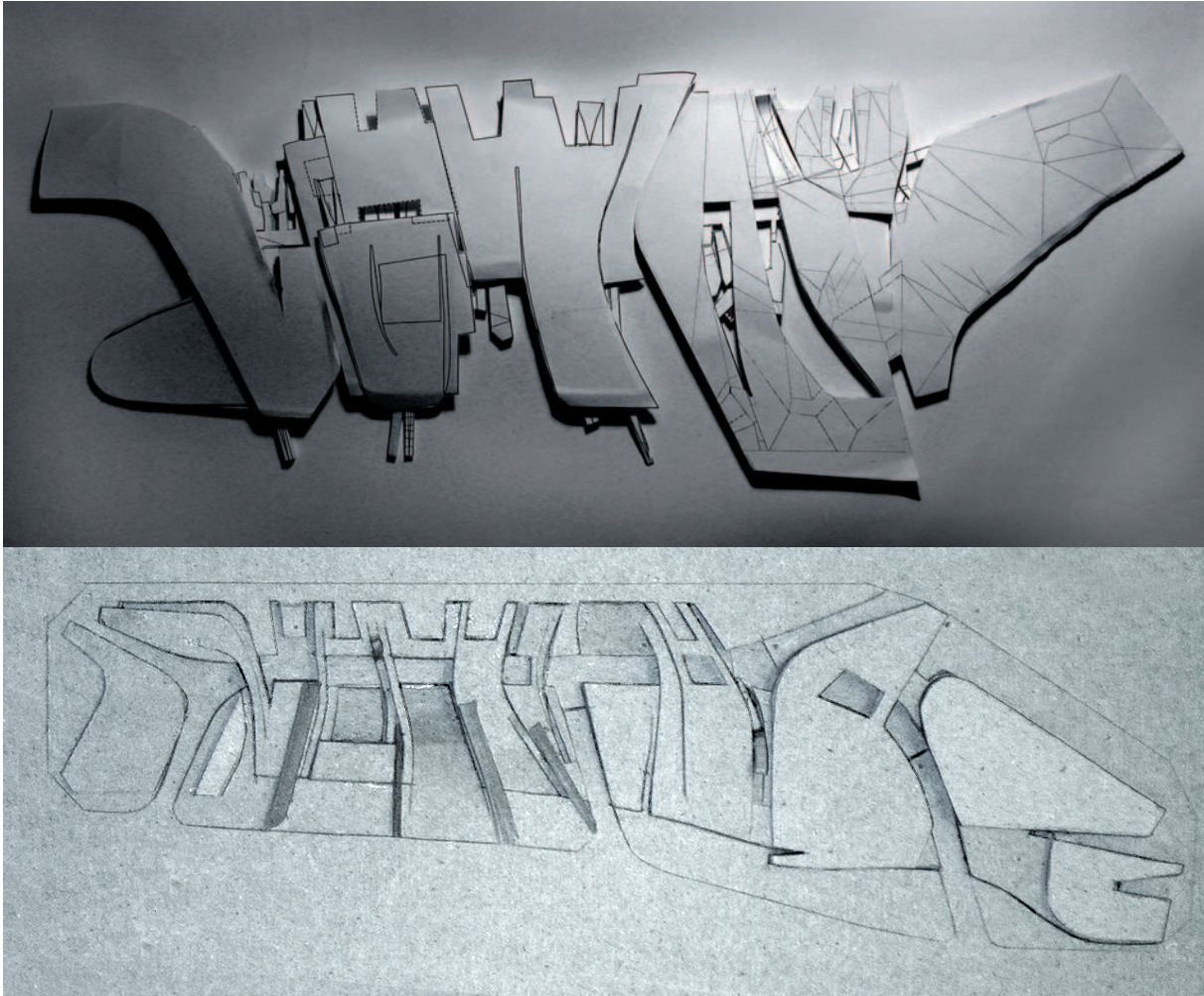
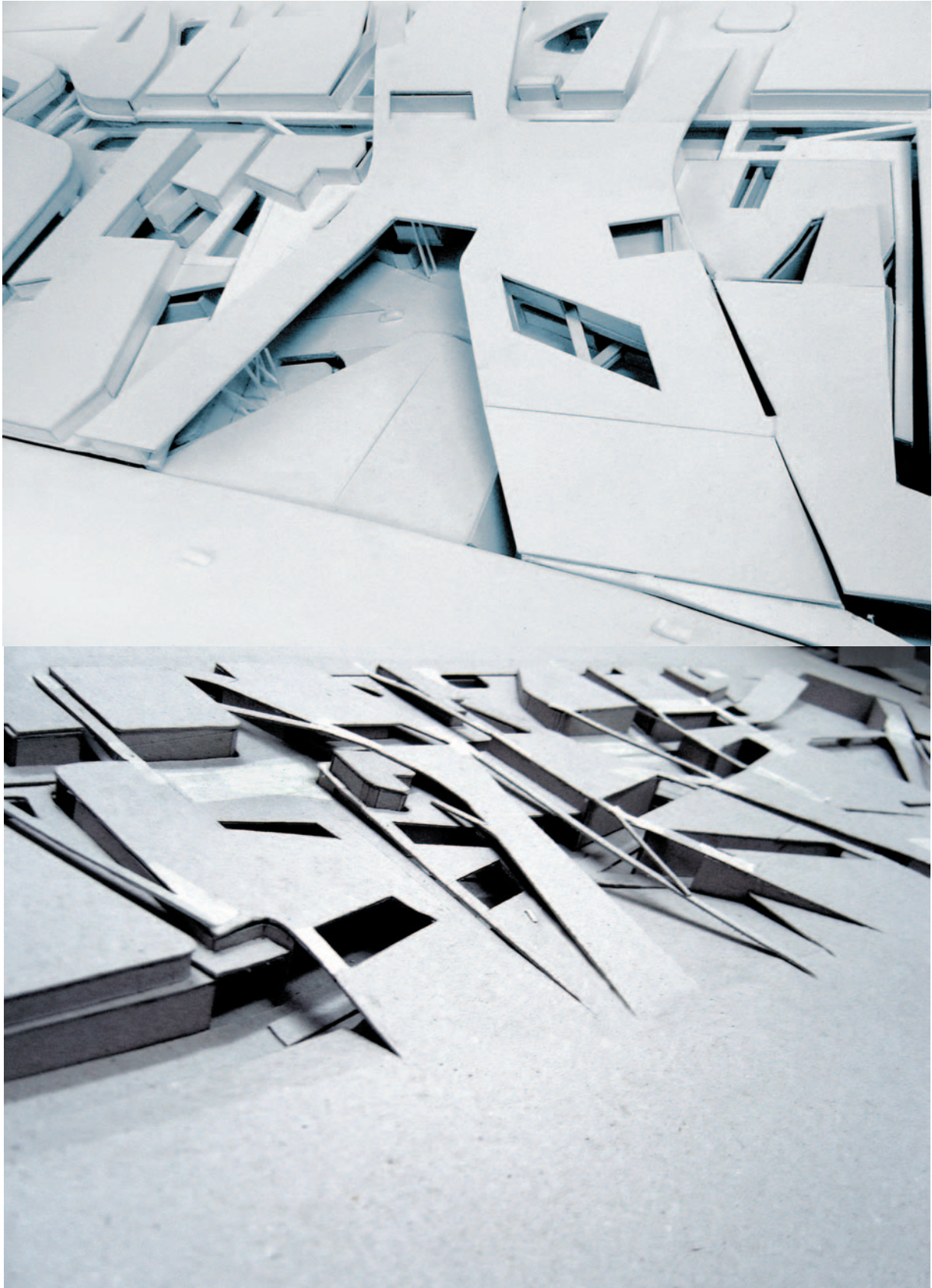


Image 10
Various phases, cardboard models
showing the arrangement of
the units and the courtyards,
marcosandmarjan, *Xiyuan* (2004).

The main aspects of traditional Chinese architecture interpreted include the employment of specific buildings for particular functions (hotels and KTV), the implementation of a unit system similar to that of a traditional low-rise Chinese city (retail/entertainment units), the use of courtyards that can be accessed by a series of corridors (building interstices), and the intention of blending buildings with the natural surroundings (green belt and accessible roofs from the south side). (images 10–14)



Images 11–14
Various phases, cardboard models
showing the arrangement of
the units and the courtyards,
marcosandmarjan, *Xiyuan* (2004).



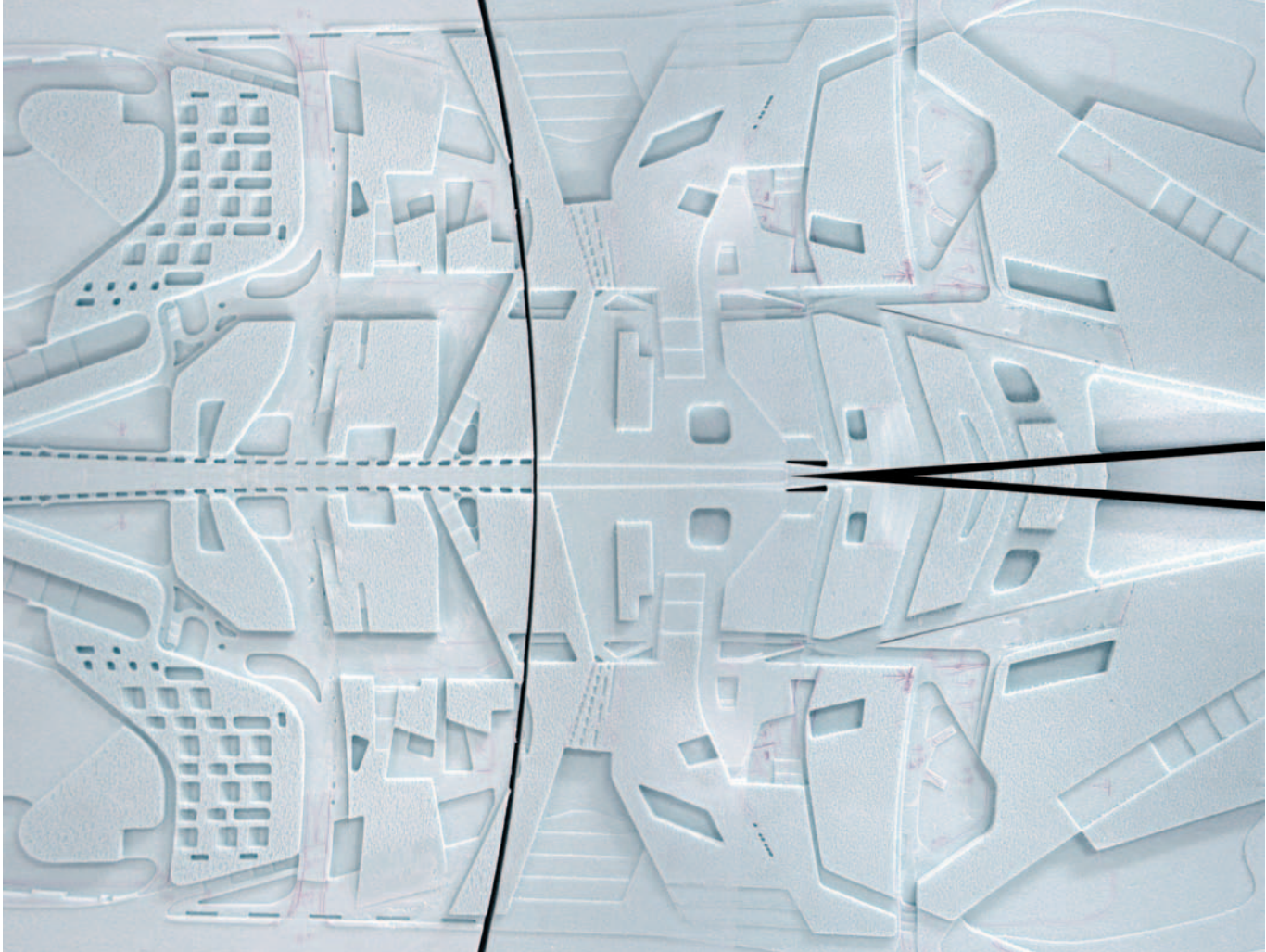
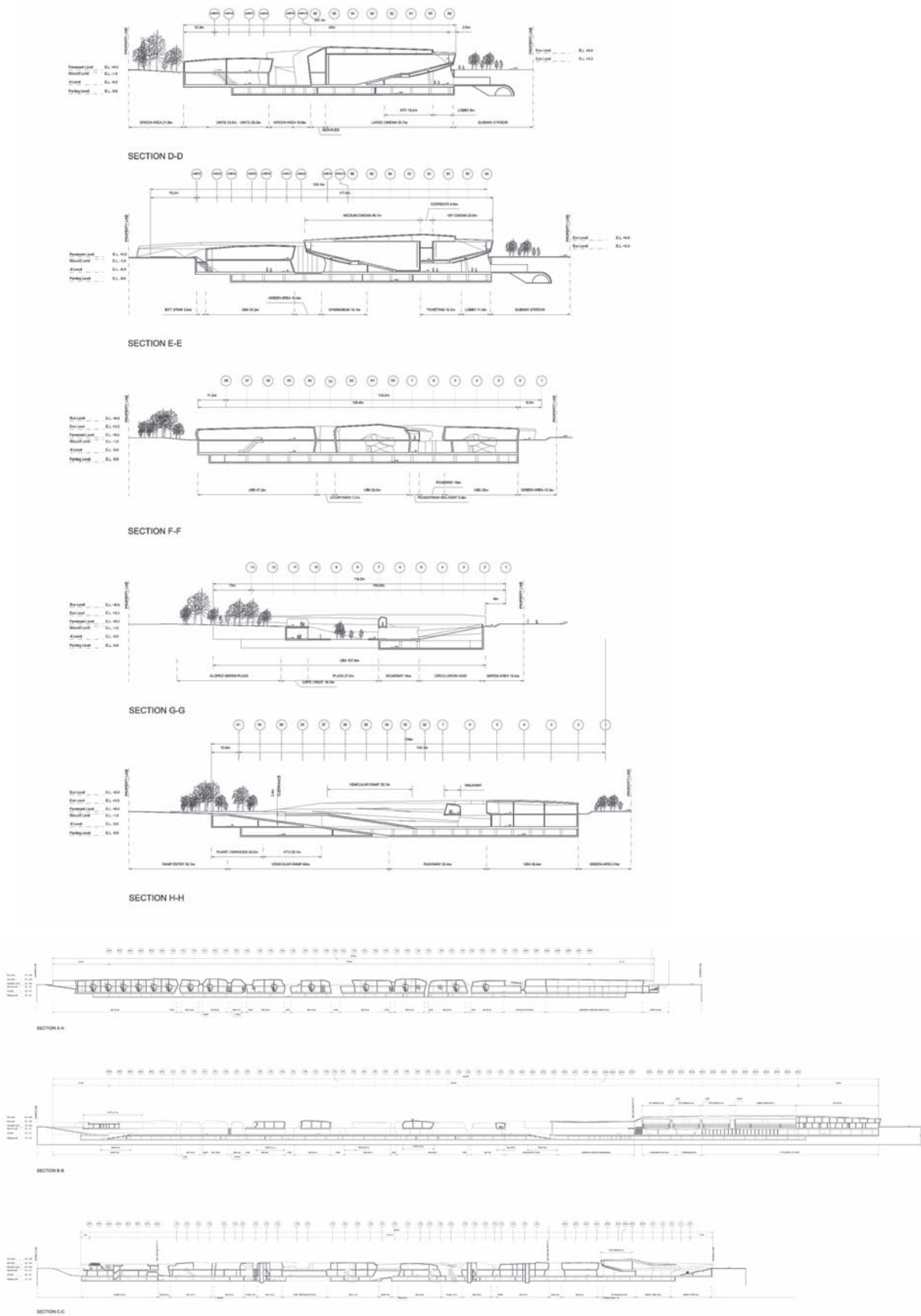


Image 15
Various phases, cardboard models
showing the arrangement of
the units and the courtyards,
marcosandmarjan, *Xiyuan* (2004).

(3) Architectural language (tradition and innovation).

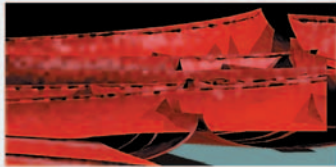
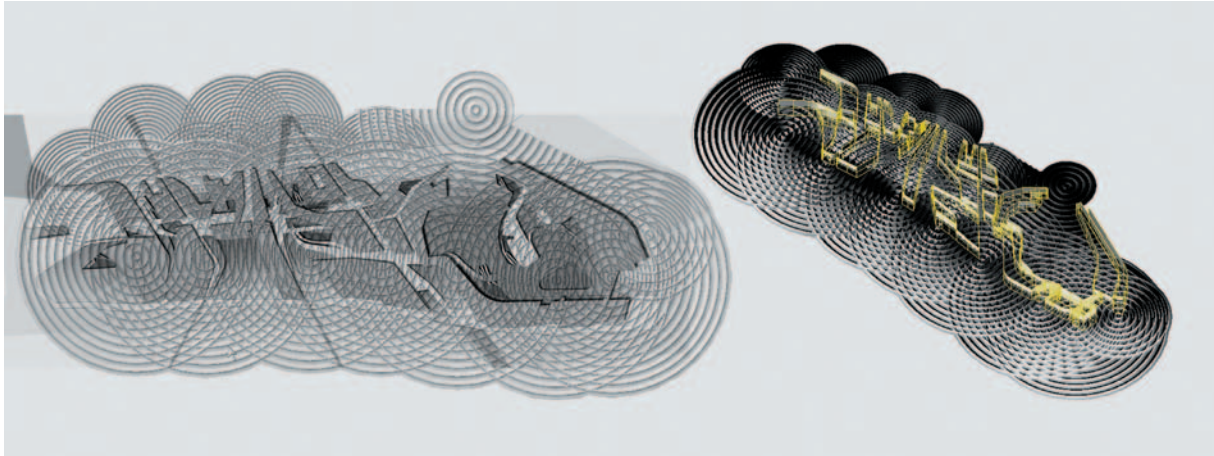
The project endeavours to reject the long-standing dualist thinking in which binaries such as 'essence or form', 'traditional or modern', 'East or West' reduce the conceptual framework of architectural discussion and production. In response to this, the other traditional aspects the Xiyuan project includes are: a degree of transparency and a sense of ambiguity between inside and outside spaces (as in the proposed Xiyuan Avenue), and the treatment of flat surfaces in a technological manner (CAD/CAM stone roof, metal and wooden screens) which explores abstraction and ornamental patterns in their overall appearance. (image 15)



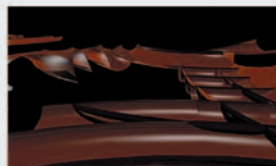
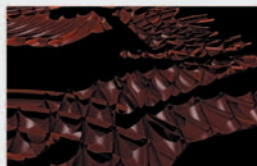
Images 16–17
 Cross and long sections showing
 the extreme flatness of the
 intervention, marcosandmarjan,
Xiyuan (2004).

Contexts

The project's proximity to a world heritage site and its consequent height restrictions at 3.3m triggered an inherently contextual and low-density proposal, as opposed to the pervasive western-style impositions of high-density commercial infrastructures. (images 16–17)

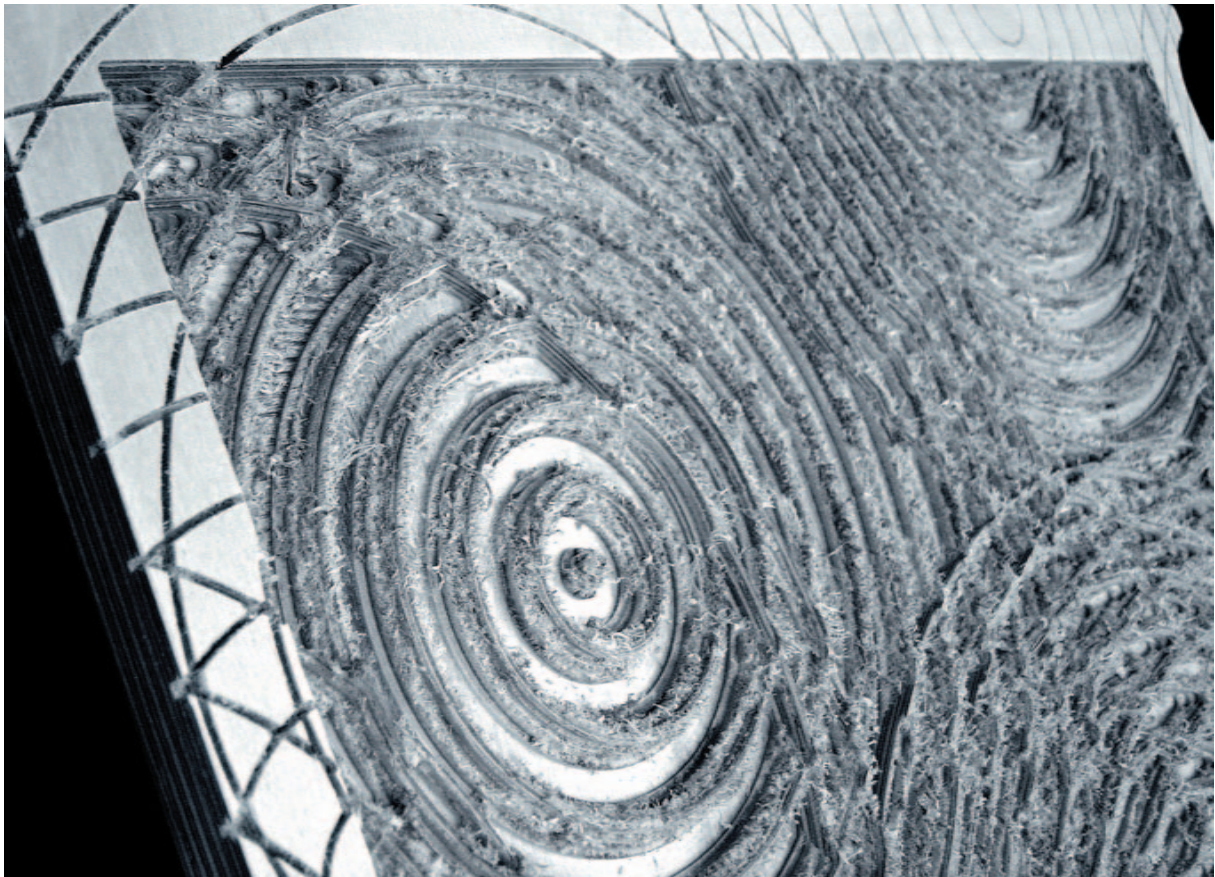
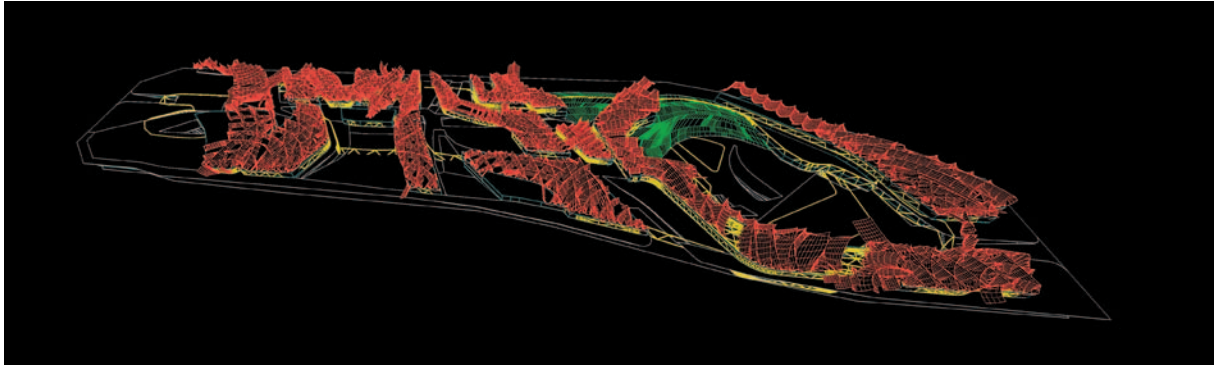


Roof Study
屋顶设计的研究



Images 18-19
Competition phase, drawings and
CAD/CAM models that study the
convolution of the site to develop
the artificial reinterpreted Chinese
roofscape, marcosandmarjan,
Xiyuan (2004).

The roof is designed as the most prominent part of the intervention, suggesting an encounter between tradition and modern design. As a result of the limit of the building's height, the roof is understood as the 'fifth' façade. The rippling of the water surface on the Kunming Lake and the curvature of the Royal Palace's roofs provided the inspiration for this concept. Imagine drops of water falling at every important point of the site, creating a sequence of ripples that intertwine with one another. The big ones symbolize the more important parts of the building, such as the main entrances, whereas the smaller ones represent secondary areas. The volumetric appearance of the complex thus resembles that of a village. (images 18–19)



Images 20–21
Competition phase, drawings and
CAD/CAM models that study the
convolution of the site to develop
the artificial reinterpreted Chinese
roofscape, marcosandmarjan,
Xiyuan (2004).

Methods

The research involved four major stages in the development of drawings, diagrams, and hand-made and CAD/CAM models:

(1) The 'Big Roof' phenomenon: readdressing the traditional upturned tiled roof.

Initially, the competition brief demanded that the whole building be covered with a series of traditional Chinese upturned tiled roofs, giving this new intervention a conspicuous Chinese face. In this way, the 'Big Roof' operates as a mask, a powerful symbol linking a modern programme to the historical past of the Summer Palace. In the words of Liang Sicheng, the architecture would be 'wearing a western suit and a Chinese skullcap'.¹ This 'adaptive approach' where a western-style building hides behind a Chinese-style roof is reminiscent of the long-lasting debate which has troubled Chinese architectural history, in which a conceptual binary distinction opposes the notions of essence, body, foundation, content or structure (ti), to those of form, application, use and function (yong).² (images 20–21)

¹ Referred to by Peter Rowe and Zeng Kuan in *Architectural Encounters with Essence and Form in Modern China* (Cambridge: The MIT Press, 2002), p. 95.

² According to Peter Rowe and Zeng Kuan this differentiation emerged during the 'Self-Strengthening Movement' of the late nineteenth century in China and remained central in later moments, such as the Hundred Days' Reform and Constitutional Movement, the May Fourth movement and the Republican and Nationalist period, as well as in Mao's reformulation period (although in this period it was discussed using another terminology), Rowe and Kuan in *Architectural Encounters*, p. 22.

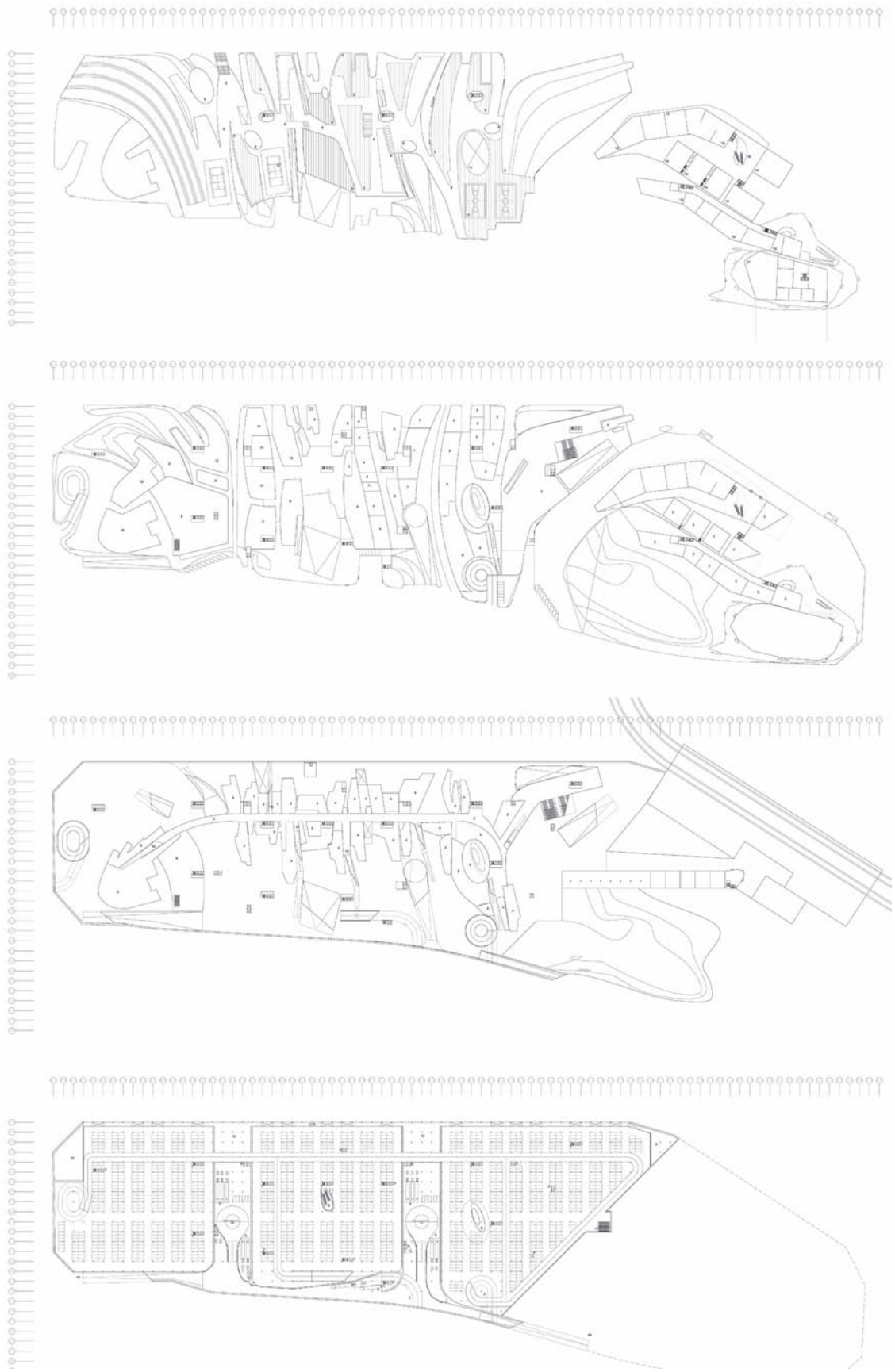


Image 22
Second phase, plans of roof,
ground floor, first and second
basement level and car park,
marcosandmarjan, *Xiyuan* (2004).

(2) From mono-programmatic to multi-programmatic: the redefinition of the pre-established programme.

As a result of the uncertainties regarding the financial viability of such a programme – so common in contemporary China – the project went through considerable design changes. From an open and very permeable multi-purpose intervention with retail areas, conference facilities and public entertainment in the first stage, the project then transfigured in the second stage into a mono-programmatic, large-scale shopping mall. In the later stages it turned back into a multi-programmatic entertainment complex with hotels, shop and entertainment units, KTV and cinemas, exhibition/culture facilities. Although the idea of a highly marketed intervention under the brand name of a western architect, characterized by the fake image of a 'Big Roof', was abolished, the roof controversy remained. Yet it was turned into a large accessible green area allowing a variety of recreational and sports facilities, which afterwards became a large stone surface. (image 22)



Image 23
 Final phase, diagram of green
 areas, marcosandmarjan, *Xiyuan*
 (2004).

(3) Subtle contextualization: the careful analysis of building masses, circulation flows and green areas.

In the third stage the analysis of the immediate environment revealed localized rhythms of massing, distinct primary circulation flows, numerous secondary itineraries and clear orientational landmarks. In the broadest sense, the location of the Royal Palace and its resultant tourist pedestrian traffic allows a street (Xiyuan Avenue) to be drawn through the site. In order to achieve the percentage of green area required by the Beijing Municipality (30% of the ground floor area), all the buildings and roads are grouped into a dense cluster in the middle of the site, creating a green belt all around it. This longitudinal urban park integrates external parking, pavements, recreation spots and several water pools. It allows close contact between the tourists that walk along the Boulevard and the building façades which face them and bring natural light and ventilation to the dining rooms and reception of each hotel in the -6m level. (image 23)

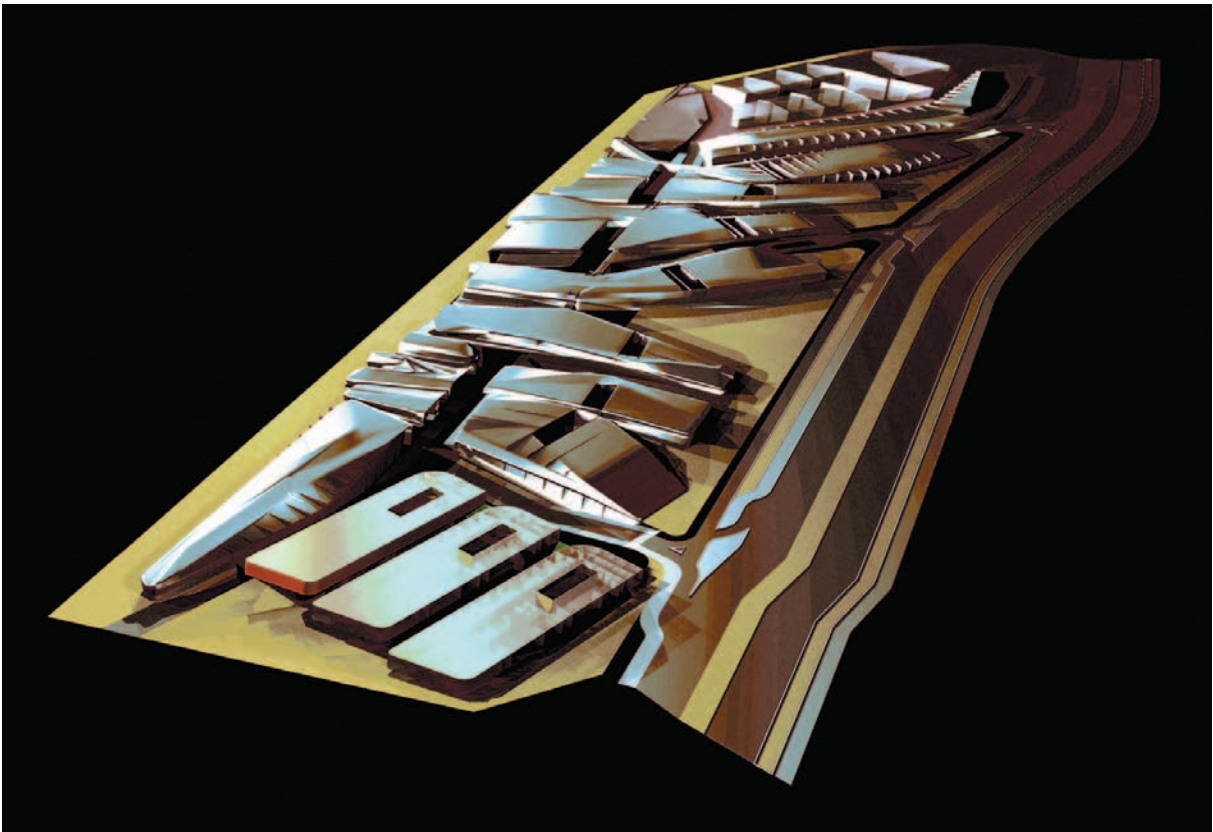


Image 24 (above)
Carved stone of the TaiHe Temple
in the Forbidden City.
Photograph: Marjan Colletti.

Image 25 (below)
Bird's eye view rendering
showing the flat, carpet-like stone
roofscape, marcosandmarjan,
Xiyuan (2004).

(4) Technological and cultural synthesis: the application of CAD/CAM technologies to primary steel structure, stone cladding and wood detailing.

The design proposed three particular design and manufacturing technologies:

(i) The use of CAD/CAM milling technologies for the different stones (perhaps traditional Jinshansi, shanshi, black qinshi and Nudoushi sandstone) for the vast roof surfaces and façades. As demonstrated in the recent achievements on Antoni Gaudi's *Sagrada Familia* in Barcelona Spain, such CAD/CAM technology provides an adequate and economic solution for similar design preoccupations. The result would resemble the sensibility of jade and red lacquer carvings, and the marvellous marble carved stone in the Forbidden City. In fact, owing to the proximity of this design intervention to such an important heritage site, the roof landscape of the proposed buildings (constructed in different phases) is considered to be a vast, contemplative, stone carpet that introduces the Summer Palace. (images 24–25)

(ii) The use of CAD/CAM laser, plasma, water-jet or oxy cutting techniques for the manufacturing of the main steel structure and some of the façade screens, as well as the internal secondary structures and division walls. Because these technologies are long established in the shipbuilding industry and new applications are strongly expanding, such a strategy would allow the precise and uncomplicated manufacturing of the structural skeleton of the buildings. On a smaller scale, the timber construction technique of the NURBSTERs is also proposed, whereby notched laser-cut elements can be assembled without the need for nails or screws – similar to Chinese traditional timber temple structures [see output RO1].

(iii) The use of CAD/CAM rapid prototyping techniques would enable the manufacture of specific pieces, as well as the production of precise scaled models. Thanks to the advancement of 3D engineering and hi-tech computerized design and manufacturing process, there would be less need for expensive skilled labour during assemblage.



Image 26
Solo exhibition, *Xiyuan*,
marcosandmarjan *Interfaces /
Intrafaces*, Architekturpavillion
TU, Braunschweig, Germany (6
March 2005–7 January 2006).
Photograph: Marcos Cruz.

Exhibitions

The project has been exhibited in numerous places including: marcosandmarjan solo exhibitions *Interfaces/Intrafaces* at the Institute for Cultural Policy, Hamburg and Architekturpavilion TU, Braunschweig, Germany, 2005, (image 26); at Feng Chia University, Taichung, Taiwan, 2005, (image 27); at the Royal Academy Summer Exhibition, London, 2005, (image 28); at the *Metaflux*, São Paulo, Brazil; Lisbon and Aveiro, Portugal, 2005, (image 29–30); and the Venice Architecture Biennale, Italy, 2004, (image 31).

Publications

A major article on the project: marcosandmarjan, translated by Hongtao Wei, 'Orient-ations: On the Example of the Xiyuan Entertainment Complex', *Dialogue: Cross-cultural Exchanges in Architecture, Time+Architecture*, 5, 91 (September 2006), pp. 48–53. [see appendix 1.4]

The project also featured in several other articles authored by Marjan Colletti and Marcos Cruz including:

marcosandmarjan, *Interfaces/Intrafaces*, (Wien and New York: Springer, iCP, 2005), pp. 108–19; Marcos Cruz and Marjan Colletti, 'Nurbster I & II, Bartsters and Splinywall', in Yu-Tung Lin (ed.), *Demonstrating Digital Architecture: 5th Far Eastern International Digital Architectural Design Award*, (Birkhäuser, 2006), pp. 100–101, [see appendix 1.2]; Marcos Cruz and Marjan Colletti, 'marcosandmarjan architects', in Pedro Gadanho and Luis Pereira (eds), *Metaflux*, catalogue of the Portuguese Official Representation at the 9th Architecture Biennial Venice, (Porto: Civilização Editora/Instituto das Artes, 2004), pp. 123–131, p. 125, [see appendix 1.3]; Marjan Colletti, 'East of Yiheyuan', *East of Eros Architecture Annual 2005*, (London: Royal College of Art, 2005), pp. 82–83.

The project also featured in several other publications authored by various critics including:

'Xiyuan', *Complessità e Sostenibilità: Il Territorio e l'Architettura*, 1 (Milan: Gangemi Editore), pp. 7–8 [see appendix 2.3]; 'Cook's new recipe', *RIBA Journal*, 113, 6, (June 2005) [see appendix 2.4]; 'Portugal 2000-2005 um guia temporário', *Portugal 2000–2005: 25 edifícios do século XXI*, 2G Dossier (2005), p. 9 [see appendix 2.5]; 'Um arquitecto português com obra em Pequim', *Ponto Final*, 817, (June 2005), pp. 10–11 [see appendix 2.6].

The Xiyuan entertainment complex also features during the broadcasting of Unit 20 work by CCTV-China at the Bartlett School of Architecture UCL (27 May 2005). (image 32) The project has been presented in numerous lectures and seminars.



Image 27
Solo exhibition, *Xiyuan*,
marcosandmarjan experiments,
Department of Architecture, Feng
Chia University, Taichung, Taiwan
(2–11 March 2005).
Photograph: Marjan Colletti.



Image 28
Group exhibition, framed
printouts, *Xiyuan*, Royal Academy
Summer Exhibition, London
(2005).
Photograph: Marcos Cruz.

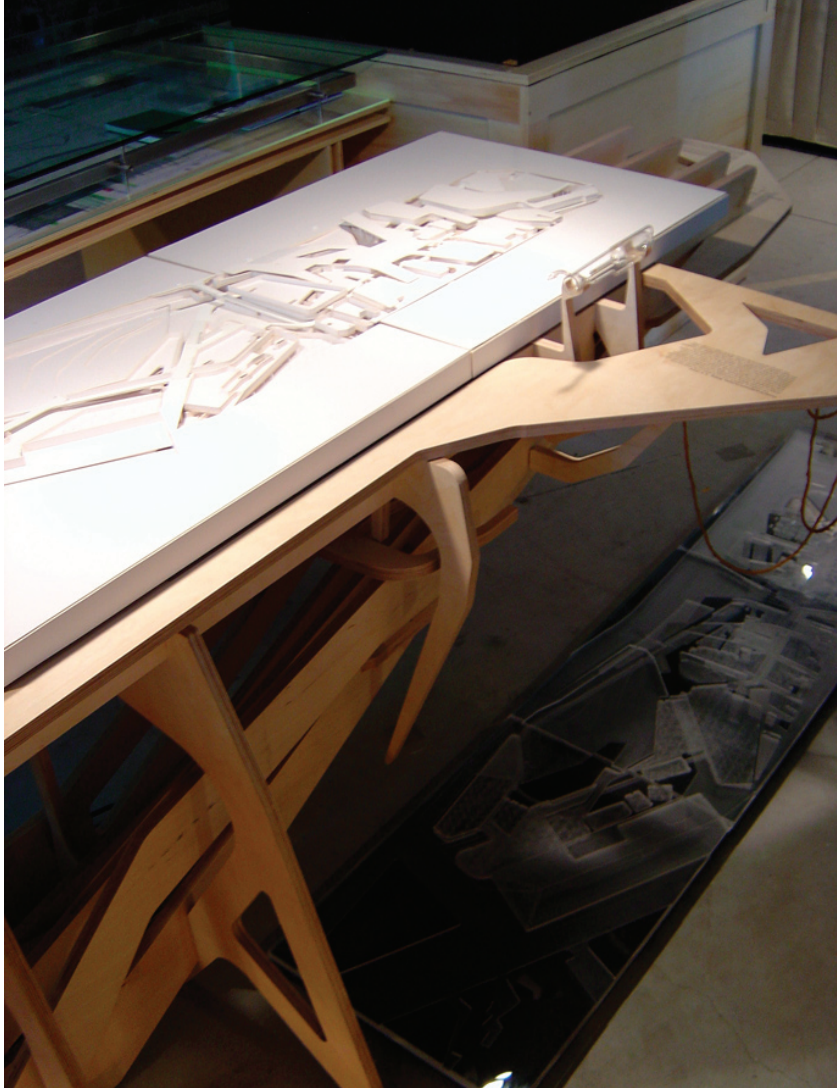


Image 29
Group exhibition, CNC milled foam and perspex CAD/CAM models,
and preliminary cardboard models, *Xiyuan, Metaflux* (curators: Pedro
Gadanhó and Luis Tavares Pereira), Fundação Tomi Othake, São Paulo,
Brazil (18 May–10 July 2005).



Image 30
Group exhibition. CNC milled foam and perspex CAD/CAM models, and preliminary cardboard models, *Xiyuan, Metaflux*, (curators: Pedro Gadanho and Luis Tavares Pereira), Cordoaria Nacional, Lisbon, Portugal (December 2004–January 2005).
Photograph: Luis Pavão.

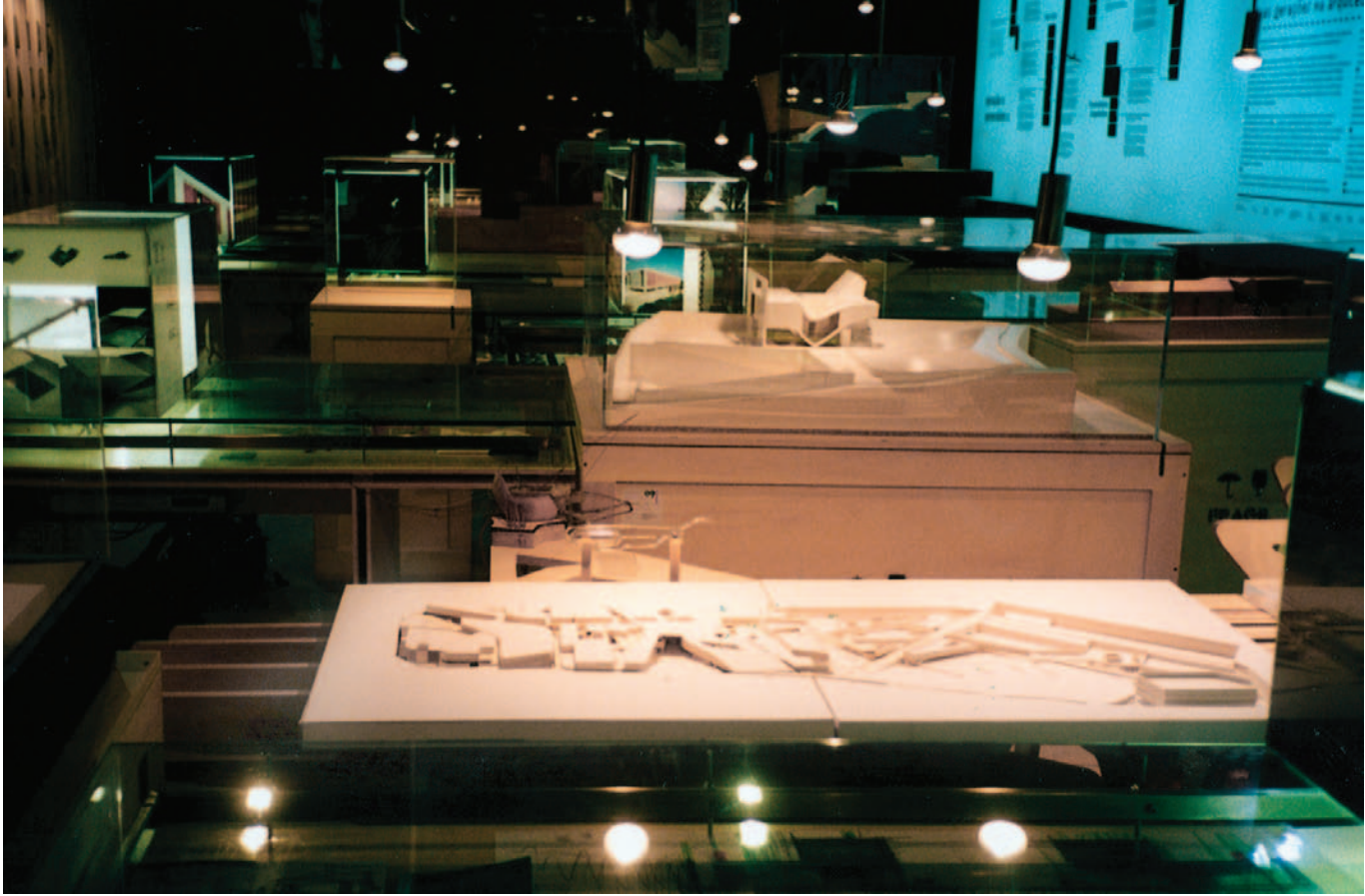


Image 31
Group exhibition, CNC milled foam and perspex CAD/CAM models, and preliminary cardboard models, *Xiyuan, Metaflux* – Portuguese Official Representation (curators: Pedro Gadanho and Luis Tavares Pereira), Venice Biennale, Italy (12 September–7 November 2004).
Photograph: Marcos Cruz.



Image 32
Interview with Marcos Cruz by CCTV China (2005).
Photograph: Kenny Tsui.

Esteem

The project was the winning entry in an invited competition (2004).

Reviews

'Agora: Dreams and Visions', *L'ARCA*, 206, (September, 2005), pp. 46–55 [see appendix 2.1]; 'Projectar em Pequim', *Construir*, (22 October 2004), p. 27 [see appendix 2.2].

Appendix 1: Related Articles by Marjan Colletti and marcosandmarjan

(1.1) marcosandmarjan, *Interfaces/Intrafaces*, (Wien and New York: Springer, iCP, 2005), pp. 108–19.

(1.2) Marcos Cruz and Marjan Colletti, 'Nurbster I & II, Bartsters and Splinywall', in Yu-Tung Lin (ed.), *Demonstrating Digital Architecture: 5th Far Eastern International Digital Architectural Design Award*, (Birkhäuser, 2006), pp. 100–101.

(1.3) Marcos Cruz and Marjan Colletti, 'marcosandmarjan architects', in Pedro Gadanho and Luis Pereira (eds), *Metaflux*, catalogue of the Portuguese Official Representation at the 9th Architecture Biennial Venice, (Porto: Civilização Editora/Instituto das Artes, 2004), pp. 123–131, p. 125.

(1.4) marcosandmarjan, translated by Hongtao Wei, 'Orient-ations: On the Example of the Xiyuan Entertainment Complex', *Dialogue: Cross-cultural Exchanges in Architecture, Time+Architecture*, 5, 91 (September 2006), pp. 48–53.

(1.5) Marjan Colletti, 'East of Yiheyuan', *East of Eros Architecture Annual 2005*, (London: Royal College of Art, 2005), pp. 82–83.

Appendix 2: Critics' Reviews

(2.1) Anon., 'Agora: Dreams and Visions', *L'ARCA*, 206, (September 2005), pp. 46–55.

(2.2) Ana Baptista, 'Projectar em Pequim', *Construir*, (22 October 2004), p. 27.

(2.3) Anon., 'Xiyuan', *Complessità e Sostenibilità. Il Territorio e l'Architettura*, 1 (Milan: Gangemi Editore), pp. 7–8.

(2.4) Anon., 'Cook's new recipe', *RIBA Journal*, 113, 6, (June 2005).

(2.5) Ana Vaz Milheiro, 'Portugal 2000–2005 um guia temporário', *Portugal 2000–2005: 25 edificios do século XXI*, 2G Dossier (2005), p. 9.

(2.6) Joao Paulo Meneses, 'Um arquitecto português com obra em Pequim', *Ponto Final*, 817 (June 2005), pp. 10–11.

